

REMARKS

Claims 1-21 are pending in the Office Action. Claims 5, 9, 12 and 18 have been cancelled. New claims 22-35 have been added.

Claims 1-21 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, claims 1, 8, 14, 17 and 21 were rejected as being confusing, vague and indefinite and/or lacking antecedent basis. Claims 1, 8, 14, 17 and 21 were amended to address the Examiner's rejections. Therefore, it is respectfully requested that the rejections be withdrawn.

Claims 1 and 4-18 are rejected under 35 U.S.C. § 102(b) as being anticipated by Kluge (U.S. Pat. No. 5,234,400) and/or alternatively by Bye-Jorgensen et al. (U.S. Pat. No. 3,782,623). Claims 1-8, 16, 19 and 21 are rejected under 35 U.S.C. § 102(b) as being anticipated by Rafferty et al. (U.S. Pat. No. 5,582,528). The rejections are respectfully traversed.

Claim 20 has been indicated by the Examiner as containing allowable subject matter. Claim 20 has been amended to be in independent form, and include the subject matter of the claims from which it depends, i.e., claims 1 and 18. Therefore, claim 20 is now believed to be in condition for allowance.

Claim 1 has been amended to include the subject matter of now cancelled claim 18, and recites a partition arranged to part an inner layer of fluid substantially devoid of particles from an outer layer of fluid carrying particles. The partition provides the new and unexpected result of controlling where within the continuum of liquid the part is made, and thus the make up of the subsequent inner and outer layers. The position of the partition controls the flow rate (due to area) from each outlet and the degree of separation due to the tendency of particles to move radially within the sleeve.

None of the cited references, specifically Kluge, Bye-Jorgensen et al. and Rafferty et al., disclose this feature. Kluge discloses only two outlets 10 and 7 from the drum 1. Some of the fluid exits the drum at outlet 7 and the remainder of the fluid exits the drum through outlet 10, without the fluid being parted by a partition. Bye-Jorgensen et al. also does not disclose a

partition for parting the fluid into an inner layer and an outer layer. Lastly, Rafferty et al. does not disclose a partition or two exits. Furthermore, the shell sections 54 and 55 of Rafferty et al. do not rotate with the shaft, and therefore, there is no centrifugal force applied to the fluid.

Therefore, claim 1 is believed to be allowable over the prior. Additionally, claims 2-4, 6-8, 10, 11, 13-17, 19, 21 and 22 depend from claim 1, and are also believed to be allowable.

New independent claim 23 is believed to be allowable over the prior art, specifically Kluge, Bye-Jorgensen et al. and Rafferty et al. Claim 23 recites one or more paddles projecting from the shaft into the cavity to impart a centrifugal force on fluid within the cavity. The paddles provide a new and unexpected advantage by reducing sheer in the fluid thereby applying a greater centrifugal force to the fluid than without such paddles.

Kluge discloses a worm helix 4, which rotates independently from the drum. It carries the slurry from the first end at the left hand side toward the right end. The centrifugal separation occurs with rotation of the drum 1. However, Kluge does not disclose a helix 4 acting as a paddle to impact the centrifugal force.

Bye-Jorgensen et al., which operates similarly to Kluge, discloses a helical blade 34 that rotates relatively slowly as compared to the speed of rotation of the drum 12. The pitch of the helical conveyor 32 is designed to retard the flow. There is no disclosure of paddles for imparting centrifugal force.

Rafferty et al. discloses vanes 32 which cause the fluid to flow or redirect flow. There is no disclosure of paddles for imparting centrifugal force. Additionally, shell sections 54 and 55 do not rotate with the shaft, and therefore there is no centrifugal force applied to the fluid.

Therefore, claim 23 is believed to be allowable over the Kluge, Bye-Jorgensen et al. and Rafferty et al. Claims 24-31 depend from claim 23, and for the reasons claim 23 is allowable, claims 24-31 are also believed to be allowable.

New independent claim 32 is believed to be allowable over the prior art, specifically Kluge, Bye-Jorgensen et al. and Rafferty et al. Claim 32 recites a helically shaped cavity imparting a centrifugal force on fluid within the cavity. This provides the advantage of both applying a centrifugal force with reduce sheer and advances the fluid through the separator.

Kluge discloses a cylindrically-shaped cavity between a drum 1 and a conveyor worm 3.

The fact that a worm helix is positioned in the cavity does not change the shape of the cavity. Thus, Kluge does not disclose a helical cavity.

Similarly, Bye-Jorgensen et al. discloses a cavity between the shaft 36 and the rotating drum 12, which is also not helically shaped.

Rafferty et al. discloses a cavity between shell halves 28 and 29 and shell sections 54 and 55, which is not helical. Furthermore, Rafferty et al. does not disclose any centrifugal force.

Therefore, claim 32 is believed to be allowable over Kluge, Bye-Jorgensen et al. and Rafferty et al. Claims 33-35 depend from claim 32, and for the reasons claim 32 is allowable, claims 33-35 are also believed to be allowable.

By the foregoing amendments and arguments, the Applicant believes that claims 1-4, 6-8, 10, 11, 13-17, 19-35 are now in condition for allowance. Reconsideration and withdrawal of the rejections are respectfully requested. As all grounds of rejection have been addressed, entry of this Amendment and issuance of a Notice of Allowance of claims 1-4, 6-8, 10, 11, 13-17, 19-35 is respectfully solicited.

Should the Examiner believe anything further is desirable in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicant's representative at the telephone number listed below.

Please charge any shortage or credit any overpayment of fees to BLANK ROME, LLP, Deposit Account No. 23-2185 (113272-00103). In the event that a petition for an extension of time is required to be submitted herewith and in the event that a separate petition does not accompany this response, Applicants hereby petition under 37 C.F.R. §1.36(a) for an extension of time for as many months as are required to render this submission timely. Any fee due is authorized above.

Respectfully submitted,

Richard Caufield

By:



John J. Yun

Registration No. 53,823

Attorney for Applicant

BLANK ROME, LLP
The Watergate
600 New Hampshire Ave., NW
Washington, D.C. 20037
Telephone: (202) 772-5800
Facsimile: (202) 572-1400

JJY/BJ